Space Weather Forecast

Issued on Wednesday, 11 May 2022 at 13:07 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Mainly Quiet geomagnetic activity. Chance of isolated R1-R2 radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been High with a Strong combo-flare (X1.5 resulting from two separate simultaneous sunspot flares) occurring yesterday. However since then, solar activity has been mainly Low (Common-class flares). There are two large sunspot regions currently facing the Earth, the one responsible for most of yesterday's flare is now decaying, but the other is still developing and becoming a little more complex. Yesterday's activity resulted in CMEs (Coronal Mass Ejections) but currently not thought to be fully Earth-directed.

Solar Wind / Geomagnetic Activity: The solar wind has been at very low ambient levels, with an exceptionally slow wind speed of 260km/s. Total magnetic field strength has been mainly weak with features in it which would normally give us a little bit of geomagnetic activity, but because of the slow wind, activity has been mainly Quiet (Kp0-2) over the past 24 hours.

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be Low with background Common-class flare flux due to the presence of two sizable sunspot regions. There is a continual chance of this increasing into Moderate activity (isolated M-flares) but the current risk of further Strong flares (X-class) is considered very low at this stage.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 06 May was expected to arrive at Earth yesterday (10 May), with a smaller risk of an arrival today on 11 May, although there is a chance we have already seen this come and pass. Therefore it is unlikely we will see anything else more significant. Apart from an uncertain chance of activity near the end of the forecast period (Friday/Saturday) due to a potential shock from yesterday's X-flare (no significant Earth-directed CME evident) no further features are forecast to affect the Earth. Therefore, geomagnetic activity after today should be mainly Quiet (Kp0-2) with isolated Unsettled (Kp3) periods.

Energetic Particles / Solar Radiation: Solar radiation (high energy protons) are currently not expected to exceed thresholds over the next 4 days.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	30	30	30	30
Very Active	R3 to R5 X	Yes	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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